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MIDWEST
CHP
APPLICATION
CENTER



Annual Report 2001/2002

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Note from the Center Director:

I'd like to personally thank the many individuals at the U.S. DOE Headquarters, the Oak Ridge National Laboratory and the U.S. DOE Chicago Regional Office for their technical guidance and support during the development and implementation of the Midwest CHP Application Center (MAC).

Our first year of operation, a milestone reached in March 2002, was focused on establishing the identity of the MAC and gaining the acceptance of our target customers in the Midwest. I believe that through our extensive outreach efforts, we are now recognized as both a reliable source of unbiased CHP information and a technical resource able to provide assistance in identifying and assessing CHP applications.

As we enter the second year of the MAC, our challenge shifts somewhat to transforming our name recognition and our relationships with our targeted customers into executing CHP application support, expanding our role of education, and providing high quality technical services. The foundation for success has been set. The measure of success for the MAC is the level of acceptance and implementation of CHP as the preferred energy efficient and environmentally friendly on-site energy option in the Midwest.

This report provides a synopsis of our activities and accomplishments in year one, and outlines our challenges and efforts to meet those challenges for year two.

John J. Cuttica, Director
Midwest CHP Application Center

September 2002

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1. Overview and Purpose

The concept of promoting CHP for commercial, institutional, and industrial applications at the State and regional level was first discussed at the Lake Michigan Regional CHP Roadmap Workshop in Chicago, Illinois in November 1999. It was viewed as a daunting task to be able to change the long held concept of separate power and heating/cooling equipment and individual equipment efficiency to the concept of an integrated electric/thermal system viewed by its overall fuel use efficiency. In order to facilitate this kind of change in thinking, it might be best to approach it at a regional, state, and local level because many of the factors that influence the viability of CHP occur at this level. Factors such as weather, electric rates and tariff structures, gas prices, interconnection requirements, and codes and standards, are all affected by State and local conditions and requirements. From there the University of Illinois – Energy Resource Center (UI-ERC) and the Gas Technology Institute (GTI) developed the DOE concept for regionally based “Application Centers” to facilitate the deployment of CHP.

In February of 2001, the Midwest CHP Application Center (MAC) was started by funds provided by the Department of Energy, Office of Power Technologies (DOE-OPT). The MAC set out to formulate and implement a **technology transfer** program in the Midwest (Illinois, Indiana, Ohio, Wisconsin, Minnesota, Missouri, Iowa, and Michigan). The purpose was to drive a change in perception that CHP systems are both a technically and financially beneficial means to enhance distributed generation by employing thermal recovery technologies (for heating, cooling, and humidity control). The objectives of the MAC are to reduce the perceived risks associated with CHP by providing **information exchange, education, and technical assistance** to “target customers”:

- Engineering Firms
- Architectural Firms
- Mechanical and HVAC Contractors and Specifiers
- Building Owners and Operators
- State and Local Officials

The benefits associated with increasing market penetration of CHP systems are numerous and advantageous to society. CHP can be employed to:

- Offset the growth in electric demand,
- Improve electric grid reliability and power quality,
- Increase energy efficiency, thereby decreasing the use of natural resources, and
- Lower system air emissions.

However, the acceptance of CHP is not without obstacles. It is known that the building workers trades are risk averse and the consulting engineering community is not currently compensated to provide energy efficient designs or to incorporate innovative technologies in the buildings they design.

There are also regulatory barriers such as:

- Varied and conservative grid interconnection requirements that add cost and time to any project connecting on-site generation equipment to the electric distribution system, and
- Electrical rate structures and fees that affect the financial viability of CHP to end-users because they may be charged:
 - “standby rates” that are often complicated and can result in unrealistically high charges, and
 - “exit fees” which are intended to compensate utilities for stranded costs, but can be costly to the end-user, and
- Deregulation causes uncertainty in gas and electric prices.

Therefore, there is a clear consensus that for CHP to become perceived as a viable technology, engineering and regulatory risk reduction is essential. The only other option would be to lower the initial cost of CHP systems significantly such that potential owners/operators would be willing to assume the risk in exchange for a potential high-rate of return on their investment.

2. Objectives and Tasks

In the first year of operation the MAC set out to demonstrate the concept of a regional application center, establish the protocol for the implementation and operation of additional regional application centers, and evaluate the effectiveness of the activities. In order to accomplish this, the Statement of Work (SOW) provided for four Tasks:

- Task 1:** Complete State Baseline Characterizations for two States
- Task 2:** Develop a protocol for and complete five case studies and develop an Internet database of case studies.
- Task 3:** Establish a regionally based website with an information repository.
- Task 4:** Identify and establish the protocols for understanding the customer needs and providing technical assistance.

3. Accomplishments

Appendix A provides the milestones for the first year of operation.

3.1 Technology Transfer

General

Since the overall purpose of the MAC is to formulate and implement a technology transfer program to strengthen the perception that CHP can be both technically and financially beneficial when appropriately applied and valued, the MAC participated in over 25 conferences, meetings, and made over 20 presentations during its first year of operation. This was done in addition to the four tasks outlined in the SOW that directed the principle activities of the MAC. Appendix B describes in detail the total activities that were conducted by the MAC in the first year of operation including technology transfer activities as well as the four tasks specified in the contract Statement of Work. Highlights of these activities are provided below.

The Midwest Application Center also works closely with the Midwest CHP Initiative (MWCHPI), a regional CHP coalition that includes individuals from the Department of Energy - Chicago Regional Office (DOE-Chicago), EPA (National, Regional, and State), seven state energy offices, gas utility companies, electric deregulation advocates, environmental groups, regional industry groups, and utility commission personnel. Individual from the MAC chairs both the overall Midwest CHP Initiative and the Initiative's Education subcommittee. Other MAC personnel are active participants in the Initiative as well. The MAC also has established a close working relationship with the DOE-Chicago Office. The activities of the MAC are focused in the same eight-state Region as the DOE-Chicago Office (Illinois, Indiana, Iowa, Ohio, Wisconsin, Michigan, Minnesota, and Missouri). Activities between the three organizations are leveraged to support each other and therefore maximize the promotion of CHP in the Midwest. A few of the more significant activities of the MAC with these organizations are discussed in this report.

Presentations

The MAC has made numerous presentations on CHP and the Application Center at both local and national conferences. We have made presentations to such organizations as:

- Midwest Energy Efficiency Alliance (MEEA) (Chicago)
- Midwest Cogeneration Association (MCA) (Chicago)
- National Association of Environmental Managers – Chicago Chapter
- Chicagoland Arts and Sciences Energy Consortium (CLASEC)
- National Organization of State Energy Offices (NASEO)
- Federal Energy Management Program (FEMP – DOE) (IL)
- American Gas Cooling Center (AGCC) (IL)
- Association of State Energy Research and Technology Transfer Institutes (ASERTTI)
- Farr Associates (Architect) (Chicago)

Presentations have also been made at conferences and workshops such as:

- USCHP Road Mapping Workshop (MD)
- International Energy Conference (OH)
- Midwest Plant Engineering and Maintenance Show (MN)
- Illinois Governors Energy Policy Workshop (IL)
- Microgeneration to Power Parks Conference (MI)
- National Association of State Energy Offices (NASEO) (WDC)
- DOE Distributed Generation Peer Review (WDC)
- Minnegasco Seminar (MN)
- State of Indiana CHP Workshop (IN)

Conferences

The MAC has also hosted (or co-hosted) several conferences or workshops, such as:

- Co-hosted “Energy Days” which was sponsored by the Delta Group (Chicago). The workshops focused on discussing CHP with several Chicago area developers and architects/engineer firms for six specific potential sites.
- The UIC-ERC hosted the fall meeting of the Association of State Energy Research and Technology Transfer Institutes (ASERTTI). As part of this meeting the MAC coordinated a one-day seminar on CHP.
- Co-hosted (with the Midwest CHP Initiative) a 1-day workshop on “Grid Interconnection for the Midwest Region State Energy Offices.” This workshop was focused to attract those individuals in the energy offices who were responsible for the development of interconnection requirements. Seven of the eight Midwest Region States participated and overall feedback on the seminar was very positive.

Tours

Tours of UIC East and West Campus CHP Facilities were also provided to show others a successful CHP installation (East Campus) and also a CHP facility being constructed (West Campus). Tours were provided to:

- DOE
- AGCC
- ASERTTI
- MCA
- Peoples Gas of Florida (3 Florida utility companies)
- Primera Engineering

Meetings

Numerous meetings were held with individual associations and firms to promote familiarity and use of CHP. These meetings were focused on reaching out to the target customers. As examples meetings were conducted with the following target customers:

- Engineering Firms
 - Montgomery Watson Harza Microturbines (Midwest)
 - Pimera Museums and Colleges (IL)
 - General Energy High Schools (IL)
 - American DG Schools (IL)
- Architects
 - Fanning and Howey Schools (IN)
 - Farr and Associates School (IL)
 - Sonac Architects Health Club (IL)
- Mechanical and HVAC Contractors and Specifiers
 - Katahbar Liquid Desiccants
 - Capstone Microturbines
 - Peoples Gas CHP (IL)
 - NICOR Energy CHP (IL)
 - Minnegasco CHP (MN)
- Building Owners/Operators/Developers
 - Argent Group Telcom/Data Centers Development (IL)
 - CenterPoint Properties Commercial Property Development (IL)
 - Prime Group Realty Trust Commercial Property Management (IL)
 - Equity Office Commercial Property Management (IL)
- State and Local Officials
 - State Energy Offices Illinois, Ohio, and Minnesota
 - Joliet School District Illinois
 - Lakeside School District Indiana
 - Department of the Environment Chicago
 - Chicago Housing Authority Chicago
 - Illinois Capital Development Board Springfield

3.2 Tasks

Task 1: Baseline Characterization

A detailed outline was completed and Baseline Characterizations were completed for Illinois and Michigan. In addition, “mini-characterizations” were completed for the 6 additional States and the Midwest region for incorporation into the MAC website.

In general these Characterizations found that the Midwest was a receptive arena for the application of CHP, as there are many groups, suppliers, and engineering companies supporting the deployment of CHP in the Midwest, and there is a reasonable number of potentially suitable sites for CHP. However there are some significant barriers to the installation of CHP in the Midwest. The biggest barriers identified in the characterizations were interconnection requirements and disadvantageous rate structures. Another important issue identified is getting to the right customer who has the “right” thermal and electric loads who can achieve a reasonable payback on the relatively high equipment costs associated with the current custom design CHP systems

Task 2: Case Studies and Database Development

A detailed outline and protocol were developed for conducting Case Studies. Based on feedback from the first case study, the protocol was revised to incorporate three different levels of information reporting. In decreasing level of detail, the protocol establishes

guidance for a Site Report, Case Study, and Fact Sheet. The Site Report contains detailed technical and financial information (approximately 15 pages). The Case Study provides oversight information about the technical and financial aspects of the installation and any other key information from the Site Report (nominally 4 pages). The Fact Sheet provides brief highlights from the Site Report (nominally 2 pages). The Fact Sheet is not part of the SOW, but is viewed as a useful “tool” to provide briefs of CHP “Success Stories” that can be given out and quickly read.

A Site Report and Case Study were completed on the University of Illinois East Campus CHP Facility. A Fact Sheet has been completed in draft form. A draft Site Report has been completed for Beloit Hospital (Wisconsin). Some additional information has been requested from the Beloit site in order to complete the Site Report. The Case Study and Fact Sheet for the Beloit Hospital will then be developed.

An Internet based CHP site database was developed and launched in conjunction with the various versions of the website (refer to Task 3). The database currently includes CHP site information from Illinois (including the UIC East Campus Case Study) and is linked to other websites case studies (fact sheets) on other CHP sites in the United States. Additional data will be added from the Beloit Case Study and the Michigan Baseline Characterization, as well as other information as it is obtained. The website allows users to submit information about any additional CHP sites. Information submitted via the website will be reviewed by MAC personnel for “reasonableness” before being committed to the database.

Task 3: Website (www.CHPCenterMW.org)

Website development was subcontracted to Avalon Consulting. Avalon consulting was also responsible for the redevelopment of the national BCHP website. The MAC website was developed by first creating a “Home Page” model. Subsequently the alpha and beta-versions of the website were developed. The MAC was instrumental in working with Avalon Consulting in the development, writing, and reviewing of both the Midwest and the national websites. Work was done in partnership with Oak Ridge National Laboratory (ORNL) on the national BCHP website.

The beta-version was a near-final version of the website. Minimal comments were received and readily incorporated into the site before its launch in March 2002. Enhancements and updates continue to be made at least monthly to the website.

Task 4: SWAT Team Development (Technical Assistance Program)

An outline of the Technical Assistance Program (TAP) was developed early into the program and subsequently both a draft and final version of the TAP were developed. The TAP includes project-screening criteria in order to focus the support offered by the MAC.

A draft of the Guide Book was completed. The Guide Book provides guidance on implementing and directing the development and operation of Regional Operational Centers.

Appendix C provides a table of current projects that are being assessed by the MAC.

4. Next Steps

A Statement of Work for the second year of operation has been developed and approved. It is intended to focus more on assistance activities (“getting CHP installed”) than the first year, which focused more on establishing MAC operations. It includes provisions for:

- Providing resources to conduct the Technical Assistance Program (SWAT Team Implementation), including, initial screening assessments, technology education, site assessment visits, project justification assistance, partnership assistance, feasibility assessments, and SWAT Team Assistance
- Completing two new State Baseline Characterizations and updating the Illinois and Michigan Baseline Characterizations.
- Finalizing the Application Center Guidebook and developing a Statement of Work that can be used to competitively establish the other CHP Regional Application Centers.
- Continuing Monthly Contact / Site / Activity reports.
- Carrying out the recommendations defined in the Baseline Characterizations completed during 2001, as well as expanding the implementation activities in the target market sectors.
- Developing and publishing four additional Case Studies.
- Preparing and publishing two journal articles on the subject of CHP / Thermally Activated Technologies / Waste Heat Recovery Systems.
- Participating in conferences / workshops or other industry meetings to educate and inform the decision makers (Architects, Engineers, Facility Managers, Building Owners).
- In concert with the Chicago DOE Regional Office, working with State Energy Offices and/or State Utility Board or Commissions to educate them so that CHP is understood by them and favorably addressed when deregulation issues such as grid interconnection, standby charges, exit fees, grid reliability, and tariff structures, are addressed.
- Providing resources needed to keep the MW CHP Application Center website updated.
- Providing resources to chair the CHP Initiative in the Midwest.

A schedule of the proposed milestones and delivery dates schedule for the second year of MAC operation is provided in Appendix D.

Appendix A 2001/2002 Milestones

The only deliverables that were not made under the scope of the first year of the contract were 3 case studies and the Equipment Guide. The MAC has experienced difficulty in finding CHP sites willing to provide the time and information to perform a reasonable case study. Therefore the performance of the case studies has taken longer and has been more difficult than expected. The present plans call for completion of the 3 remaining case studies by September 2002. The draft Equipment Guide is has been submitted.

The Table below provides the first year deliverables and costs. It also identifies the deliverables that have been made.

Deliverable	Task #	Description	Date Delivered
1	1	Baseline Assessment - Outline	5/18/01
2	2	Case Study Protocol	5/18/01
3	4	Technical Assistance Program - Outline	5/18/01
4	2	Case Study #1 (UIC East Campus)	8/17/01
5	3	Website Home Page Established	9/19/01
6	1	Technical Assistance Program - Draft	9/19/01
7	1	Baseline Assessment #1 (IL)	8/17/01
8	2	Case Study #2 (BMH)	9/28/01
9	4	Technical Assistance Program - Final	3/18/02
10	1	Equipment Information Report - Draft	9/11/02
11	2	Case Study #3 (Presbyterian Home)	
12	1	Baseline Assessment #2 (Draft) (MI)	9/28/01
13	2	Case Study #4 (Evanston HS)	
14	1	Equipment Report - Final	9/11/02
15	1	Final Baseline Assessment #2 (MI)	3/18/02
16	2	Case Study #5 (Elgin Community College) & Matrices	
17	3	Website/DB (Alpha)	9/28/01
18	3	Website/DB (Beta)	3/18/02
19	1	Contact, Site Activity Reports	9/28/01
20	1	Project Guidebook (Draft)	9//28/01
21	5.1	Energizing Americas Cities - Selection Committee and Meetings	9/12/02
22	5.2	Energizing Americas Cities - US Competition Specification & International Competition Response Scope	9/28/01
23	5.3	Energizing Americas Cities - Organize and Lead Conference	9/12/02
24	5.4	Energizing Americas Cities - Select US Winner	9/12/02

Appendix B Accomplishments

Technology Transfer Activities

April 2001

- Participated and co-sponsored “Energy Days” with the Delta Group (Chicago). The Department of Energy Office of Power Technologies (DOE-OPT) and the Rocky Mountain Institute (RMI) also supported and participated in Energy Days. Over a 2-day period the group met with four developers/architects engineers to discuss CHP for buildings at six potential sites. Numerous beneficial contacts were made with developers and engineering firms.
- Developed three separate pre-proposals to test the technical feasibility of CHP for buildings in three different applications. Partnered with the State of Illinois, Department of Commerce and Community Affairs (DCCA), in submitting the pre-proposals.
- Met with Fanning and Howey Associates, one of the largest developers of schools (grammar and high schools), and members of the Lakeside school districts to analyze data from an Indiana school and assess the feasibility a CHP system.

May 2001

- Presented an overview of the MAC at the Midwest Energy Efficiency Alliance (MEEA) conference.
- Presentation on the MAC made to the Midwest Cogen Association (MCA).
- Presentation on the MAC made at the University of Maryland.
- Presentation made to the Joliet School District regarding the use of CHP in their \$80 million renovation plan.
- Participated in the Fuel Oil Conference held at Brookhaven National Laboratory in New York.
- Met with the USEPA regarding their program promoting CHP in the telecommunication data server hotels.
- Developed four pre-proposal submittals for Illinois, Indiana, and Minnesota in response to a DOE State Solicitation for CHP systems. These proposals were respectively developed in partnership with Sonac Architects and the YMCA (IL), the Joliet School District (IL), Lakeside School District (IN), the 3M Corporation (MN), for the respective State Energy Offices.

June 2001

- Met with the engineers from the Center for Neighborhood Technologies (CNT) (Chicago) to discuss the use of CHP (microturbines and/or fuel cells) in their Community Based Energy Programs.
- Met with Montgomery Watson Harza (MWH) Engineering (formerly Harza Engineering) to discuss Capstone Turbine technology and Harza’s activities in the CHP area.
- Presentation made on CHP and the MAC at the Chicagoland Arts and Sciences Energy Consortium (CLASEC).

- Participated in a one-day “kick off” meeting in Washington DC of the CHP Alliance between AGCC, USCHPA, and USDEPA. This new alliance has been formed to promote and lobby for CHP in Congress and the Senate.
- Developed the full proposal for the installation and testing of an advanced CHP application at a YMCA (Sonac Architects) in Chicago (respond to DOE State Solicitation). This proposal was then submitted by State of Illinois.
- The State of Illinois was awarded a DOE State Grant (co-funded by the State) to develop a CHP Environmental Permitting Guidebook. UIC-ERC will conduct the study and make the results available thru the MAC.
- Initiated discussions with the Ohio State Energy Office regarding the use of CHP in the Ohio School Districts.
- Agreed to review an Engineering Study on the use of CHP in a multifamily housing project for the Stark Metropolitan Housing Authority located in Canton Ohio.

July 2001

- Presentation made at a DOE Chicago Regional Energy Workshop for the Federal Building operators in the Chicago Area. Presentation covered both the Midwest CHP Application Center and the ORNL FEMP CHP Technical Assistance programs.
- Presentation made to Farr Associates (Chicago Architectural Firm) regarding the use of CHP technologies in the Prairie School District.
- Met with facility managers from the University of South Florida and the University of Central Florida, along with representatives from TECO Energy, in an effort to help remove the perceived risk associated with installing CHP systems at both the universities. A tour of both the UIC CHP plants was included.

August 2001

- Met with representative from Illinois Department of Commerce and Community Affairs (IDCCA) to discuss future projects.
- Presentation on CHP and the MAC made at the Integrated Energy Conference in Cleveland, Ohio, for governmental building operators.
- Thermax made a presentation on their DisGenie software program that assesses CHP projects. The MAC subsequently evaluated the software and decided for various reasons not to use it for screening potential CHP sites.

September 2001

- Presentation made on CHP and the MAC at the Microgeneration to Power Parks Conference, in Troy, Michigan.
- Independent of the scope of the MAC, the UIC-ERC developed lesson plans on CHP for the American Society for Healthcare Engineers (ASHE). The lesson plans will be presented as part of an accredited training program entitled “Cooling, Heating, and Power Solutions for Healthcare.” This program will be given in mid-October in Chicago, and in 9 other sessions throughout the United States over the next 9 months.

October 2001

- Presentation made on cogeneration and CHP at the Illinois Chapter of the National Association of Environmental Managers. In attendance were representatives from several Chicago based pharmaceutical and telecommunication companies.

- The UIC-ERC coordinated and hosted by a one-day seminar for the Association of State Energy Research and Technology Transfer Institutes (ASERTTI) on the subject of CHP. Presentations were made on MAC and the Case Study performed on the UIC East Campus CHP Facility.
- Attended USEPA presentation of their CHP Partnership in Washington, DC. Both UIC-ERC and GTI are founding partners in this program.
- Presentation made on the MAC and the MW CHP Initiative at the USCHPA CHP Road Mapping Workshop, in Baltimore, Maryland.
- Presentation made on the MAC at the Midwest Plant Engineering and Maintenance Show held in Minneapolis, MN. In attendance were representatives from several Minnesota based energy supply companies.
- Presentation made on CHP Technologies, Application, and Energy Pricing at a Minnegasco seminar on distributed generation held for approximately 70 commercial customers in the State of Minnesota.
- Met with Minnesota State Energy Office to discuss the Midwest CHP Application Center and the MW CHP Initiative.

November 2001

- Met with Peoples Gas Company to discuss potential addition of heat recovery technology to already installed microturbines at a Chicago brewery.
- Met with the Distributed Generation Technical Services Group at ComEd to explore the possibility of joint MAC/ComEd CHP projects.
- Met with General Energy, a Chicago area engineering firm to discuss potential school sites for CHP installation.
- Made presentation on the MAC and the MW CHP Initiative at the DOE/DER Peer Review meeting in Washington, DC.

December 2001

- Met again with representatives from the ComEd Distributed Generation Tech Services Group. The ComEd representatives toured UIC CHP facility and provided training on their Standby Rate (Rate 18).

January 2002

- Attended the 2nd Annual Microturbine Workshop at the University of Maryland.

February 2002

- Co-hosted, with the Midwest CHP Initiative, a Grid Interconnection Workshop for the Midwest Region. Seven of the eight Midwest State Energy Offices participated. Participants viewed the workshop as very beneficial.
- Presentation made on CHP at a National Association of State Energy Offices (NASEO) Energy Outlook conference in Washington, DC.
- Attended Northeast CHP Initiative Meeting to provide an overview on both the MAC and Midwest CHP Initiative activities.

March 2002

- Presentation made on the results of the Baseline Characterizations for Illinois and Michigan at an American Gas Cooling Center (AGCC) meeting held in the Chicago area.

- Participated in a limited pre-beta demonstration/trail meeting of the CHP screening tool being developed by GARD Analytics.
- Attended the Midwest Cogeneration Association (MCA) meeting, which included a tour of the UIC West Campus CHP facility.
- Provided guidance support towards the initiation of other CHP Initiatives/Applications Centers in the Northeast, Southeast, and Northwest DOE Regions.

Task 1: Baseline Characterization

April 2001

- Developed draft Baseline Assessment Outline. Outline includes information that will be needed to begin Baseline Characterizations.
- Began initial collection of deregulation policy and pricing information for the Midwest Region. Integrated information into the Application Center database.

May 2001

- Completed a detailed outline to be used to conduct Baseline Assessments.
Deliverable

June 2001

- Began development of Illinois Baseline Characterization.

August 2001

- Completed the Illinois Baseline Characterization. *Deliverable*
- Began development on the Michigan Baseline Characterization.

September 2001

- Completed draft of the Michigan Baseline Characterization. *Deliverable*

March 2002

- Final Michigan Baseline Characterization was completed. *Deliverable*

Task 2: Case Studies and Database Development

April 2001

- Developed draft framework for case study protocol. Investigating specific information that will be needed to conduct system performance and economic analyses to be included in case studies.
- Began development of CHP database, and contact and site database tables.

May 2001

- Developed detailed draft of case study protocol. ***Deliverable***.
- Updated CHP database tables to include the types of information that will be needed to conduct system performance and economic analyses for use in case studies.

June 2001

- Began development of first case study (University of Illinois at Chicago – East Campus Cooling, Heating and Power facility).

August 2001

- Completed the first case study (University of Illinois at Chicago – East Campus Cooling, Heating and Power facility). ***Deliverable***
- Began development of second case study on Beloit Hospital in Wisconsin.

September 2001

- Revised Case Study Protocol to incorporate the three different formats for presenting information obtained during performance of a case study: Fact Sheet (single sheet double sided), Case Study (4 to 6 page open-fold brochure), and Site Report (10 to 20 page report).
- Developed draft Fact Sheet for UIC Case Study.
- Completed draft of the Beloit Hospital case study. ***Deliverable***

March 2002

- Began third case study on the Dakota Station, a natural gas and propane storage facility owned by Minnegasco, located in Burnsville, Minnesota.

Task 3: Website

April 2001

- Contacted website developer for preliminary design discussions.

May 2001

- Website design drafted.

June 2001

- Developed subcontract for website and database development.

August 2001

- Issued subcontract for website and database development to Avalon Consulting, Inc.
- Website kick-off meeting held.

September 2001

- Website homepage was established. ***Deliverable***
- Website alpha version was established. ***Deliverable***

February 2002

- Launched the beta-version of the MAC website, concurrent with the beta-version of the national website. In addition to developing, writing, and reviewing the regional website, the MAC was instrumental in working with Avalon Consulting in the development, writing, and reviewing the national website. ***Deliverable***

March 2002

- Launched the final version of the MAC website. The national website was launched concurrently.

Task 4: SWAT Team Development (Technical Assistance Program)

April 2001

- Initiated development of the Application Center Guidebook, including process flow plan.

May 2001

- Developed detailed outline of Technical Assistance Program. ***Deliverable***

June 2001

- Initial assistance provided to the GSA Office in Chicago regarding their interest in installing a small CHP system using advanced technology in the building that houses the Chicago EPA Office.
- Developed first draft of screening criteria for Technical Assistance Program.
- GTI began working with the Museum of Science and Industry in Chicago, on the installation of a 1.75 MW system utilizing a natural gas reciprocating engine and desiccant system.

September 2001

- Completed draft Technical Assistance Program. ***Deliverable***
- Drafted a “Letter of Inquiry” and submitted to the Illinois Clean Energy Community Foundation for the New City YMCA in Chicago.
- GTI has entered into a contract to install a 2.2 MW system with 450 tons of absorption chilling and a 10,000 cfm desiccant system at their facility in Des Plaines, IL. The prime mover in this application will be a natural gas reciprocating engine (Cummins and Caterpillar).
- Completed draft of Application Center Guidebook. ***Deliverable***

November 2001

- Met with a Chicago area refrigeration coil manufacturer to discuss project planning and possible CHP addition to seven Power Works microturbines (Ingersol Rand units) at their facility.

December 2001

- A CHP screening assessment for the addition of thermal recovery equipment to a current distributed generation system (owned and operated by Peoples Energy) at a Chicago brewery was performed. Initial results do not indicate a favorable payback at this particular installation, but may be favorable for similar applications in the future.
- Attended a project meeting for the potential addition of CHP to seven Power Works microturbines (Ingersol Rand units) at the Chicago area refrigeration coil manufacturers facility.
- Met with a Chicago metal casting company to discuss the potential for installation of a CHP system at their facility. This project is being supported through a GTI/Chicago project that is being funded separate from the MAC.

January 2002

- A spreadsheet was developed to estimate the billing impacts of ComEd’s Standby Rate (Rate 18) associated with installing generation capacity and generator performance.

February 2002

- An initial screening assessment for CHP for a high school in one of Chicago's northwestern suburbs has been initiated.
- An initial meeting was held with the Prime Group Realty Trust regarding a renovation project to Union Station in Chicago. Consideration is being given to installing a 1.2 MW gas turbine generator coupled with absorption chillers at that site.
- An initial meeting was held with the Primera Corporation regarding the design of central station heating and cooling plant for the new construction of Kennedy King College in Chicago. The central plant is to service up to 8 separate buildings. CHP is under consideration.

March 2002

- A conceptual economic analysis for the City of Mesa, AZ was performed for an 18 MWe cogeneration plant for a proposed new football stadium. Full report on the economics has been submitted to the City of Mesa.
- Met again with a Chicago area refrigeration coil manufacturer to discuss further project planning to add absorption chillers and heat recovery to seven Power Works microturbines (Ingersol Rand units).
- Met with a Chicago coating application company to discuss the potential for installation of a CHP system at their facility. This project is being followed through a GTI/Chicago project that is being funded separate from the MW CHP Application Center.
- Final version of the Technical Assistance Program was completed. ***Deliverable***
- Met with Primera Corporation and the A/E firms to discuss initial results of our analysis to include CHP at Kennedy King College in Chicago. The initial results look favorable.

Appendix C Current MAC Assessments

Application	Type	Status*	Generator Size (kW _e)
Refrigeration Coils	Light Industry	Investigation Phase	490
Brewery	Light Industry	Screening – DG Already Installed	180
Metal Plating	Light Industry	Inactive – Financial Concerns	1,200
Paper Container	Light Industry	Screening – DG Already Installed	790
Steel	Light Industry	Inactive – Financial Concerns	Unknown
High School	Institutional	Screening	800
University	Institutional	Installed	37,200
High School	Institutional	Screening	Unknown
High Rise Building	Commercial	Standard Outreach	1,200
High Rise Building	Commercial	Installed	1,000
Museum	Institutional	Design/Bid	1,750
Research Facility	Commercial	Installing	2,200
Paper	Light Industry	Standard Outreach	Unknown
Metal Film Coating	Light Industry	Screening	350
Cement	Light Industry	Screening	7,300
Confectionary	Light Industry	Screening	3,500
Chemical	Light Industry	Screening	2,400
Plastics	Light Industry	Screening	1,400
Metal Gears	Light Industry	Screening	1,200
Plating	Light Industry	Screening	700
Varnishes	Light Industry	Screening	350
Sterilization	Light Industry	Screening	250
Meat Packing	Light Industry	Screening	200
College	Institutional	Screening	1,000
TOTAL:			65,460

* The Status correlates to the Phases described in the Technical Assistance Program other than when it is indicated as “Installed”, “Installing”, or “Inactive.” Screening is a sub-category of the Standard Outreach Phase, where the MAC is involved in a preliminary assessment of the feasibility of installing (“Screening”) a CHP at a particular site.

Appendix D 2002/2003 Milestones

Deliverable	Task	Description	Delivery Date	Date Delivered
25	6	Technical Assistance Site Reports (<i>Approximately 12 reports through 12/31/02</i>)	4/1 - 10/01/2002	2 - Last 6/25/02
26	7	Monthly Reports (<i>9 monthly reports</i>)	4/15 - 1/15/2003	5 - Last 9/6/02
27	9	Website Update Report #1 (<i>April - June</i>)	7/16/2002	8/1/02
28	9	Website Update Report #2 (<i>July - September</i>)	10/1/2002	
29	9	Website Update Report #3 (<i>October - December</i>)	1/16/2003	
30	7	Baseline Assessment State #3 (WI) (<i>D raft</i>)	7/1/2002	9/8/02
31	7	Baseline Assessment State #3 (WI) (<i>Final</i>)	9/31/2002	
32	7	Update Baseline Assessment Illinois	08/30/02	
33	7	Update Baseline Assessment Michigan	09/30/02	
34A	7	Final Guidebook	07/01/02	6/25/02
34B	7	Request for Proposal (RFP) & Statement of Work (SOW)	07/31/02	
54	8	CHP Resource Guide	07/31/02	
35	8	Case Study #6 (Dakota Station)	09/30/02	
36	8	Journal Article #1	06/28/02	6/25/02
37	8	Journal Article #2	08/30/02	
38	8	Conferences/Workshops #1 - #3	4/1 - 12/31/2002	9/12/02
39	8	Conferences/Workshops #4 and #5	4/1 - 12/31/2002	
40	8	Develop CHP Training Course	07/31/02	
41	8	Plan, Organize, Implement Regulatory Workshops #1	4/1 - 12/31/2002	
42	8	<i>Deleted (Modification #5)</i>	-----	-----
43	8	CHP Training for MAC	4/31/2002	7/1/02
44	8	Coalition Semi-Annual Report (<i>April-September</i>)	10/01/02	
45	6	Technical Assistance Site Reports (<i>Approximately 3 reports through 12/31/02</i>)	1/1 - 3/31/2003	
46	7	Monthly Reports (<i>3 monthly reports</i>)	10/1/2002 - 3/31/2003	
47	9	Website Update Report #4 (<i>January - March 2003</i>)	03/30/03	
48	7	Baseline Assessment State #4 (<i>Draft</i>)	01/31/03	
49	7	Baseline Assessment State #4 (<i>Final</i>)	03/30/03	
50	8	Coalition Semi-Annual Report (<i>October 2002 - March 2003</i>)	03/30/03	
51	8	Case Study #7	01/30/03	
52	8	Case Study #8	02/28/03	
53	8	Case Study #9	03/30/03	

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